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Michigan Department of Natural Resources

2003 MICHIGAN FURBEARER HARVEST SURVEY

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ABSTRACT

A sample of furtakers was contacted after the 2003 hunting and trapping seasons to estimate the number of participants, days afield, and furbearer harvests. In 2003, about 13,000 furtakers pursued furbearers, an increase of 7% from 2002. The species most frequently pursued by trappers were raccoons, coyotes, and muskrats. Hunters most commonly sought coyotes, raccoons, and red fox. Harvest levels of most furbearers in 2003 were within historical ranges, except for harvest of muskrats and raccoons. The number of muskrats taken by trappers was the lowest recorded since 1957, and the number of raccoons taken by hunters was the lowest recorded since 1980. Trends in harvest are affected by both changes in furtaker and furbearer numbers; thus, harvest per furtaker was also examined for trends. The mean number of raccoon and opossum taken per furtaker has increased since the 1980s. The mean harvest of coyotes per hunter has increased since the mid-1980s, while the mean harvest of red fox by both hunters and trappers has declined during this same period. These trends suggest that raccoon, opossum, and coyote may have been increasing in abundance during the last 20 years, while red fox numbers may have been declining. An estimated 24% of trappers attempted to catch coyote or fox using snares, and 8% of trappers tried to catch beaver using snares set underwater. About 4% of bobcat hunters hired a guide to assist them while hunting bobcats. Nearly 59% of bobcat hunters used calls while hunting bobcats, and 45% of bobcat hunters used dogs.

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INTRODUCTION

The Michigan Department of Natural Resources (DNR) has the authority and responsibility to protect and manage the wildlife resources of the State of Michigan. Harvest surveys are one of the management tools used by the DNR to accomplish its statutory responsibility. Estimating harvests and hunter participation are primary objectives of these surveys. Information from harvest surveys, mandatory registration, winter track counts, and population modeling are used to monitor furbearer populations and establish harvest regulations.

The primary furbearing animals harvested for their pelts in Michigan during recent years have been muskrat (*Ondatra zibethica*), mink (*Mustela vision*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), weasels (*Mustela* spp.), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), coyote (*Canis latrans*), bobcat (*Felis rufus*), beaver (*Castor canadensis*), river otter (*Lutra canadensis*), badger (*Taxidea taxus*), fisher (*Martes pennanti*), and marten (*Martes americana*) (Frawley 2003). Opossum, weasels, and skunks could be taken year-round with any hunting or trapping license. The remaining furbearers could be harvested in 2003 during late fall through mid-winter (Table 1). Landowners or their designees could take raccoons and coyotes throughout the year on their property without a license if these animals were causing damage.

METHODS

Following the 2003 hunting and trapping seasons, a questionnaire was sent to a random sample of people who had purchased a fur harvester license (Table 2). All licensees had an equal chance of being included in the random sample. After the sample was selected, licensees were grouped into one of four strata on the basis of their residence. These strata included residents of the Upper Peninsula (UP), northern Lower Peninsula (NLP), southern Lower Peninsula (SLP), and nonresidents (Figure 1). People receiving the questionnaire were asked to report whether they pursued furbearers, number of days spent afield, and whether they harvested any furbearing animals. Estimates were calculated using a stratified random sampling design (Cochran 1977). The primary reason for using a stratified sampling design was to produce more precise estimates. Improved precision means that similar estimates should be obtained if this survey was repeated.

Estimates were calculated along with their 95% confidence limit (CL). In theory, this confidence limit can be added and subtracted from the estimate to calculate the 95% confidence interval. The confidence interval is a measure of the precision associated with the estimate and implies that the true value would be within this interval 95 times out of 100. Unfortunately, there are several other possible sources of error in surveys that are probably more serious than theoretical calculations of sampling error. They include failure of participants to provide answers (nonresponse bias), question wording, and question order. It is very difficult to measure these biases. Furthermore, harvest estimates did not include nuisance animals legally taken out of season and illegal take.

Questionnaires were mailed initially during mid-April 2004, and up to two follow-up questionnaires were mailed to nonrespondents. About 2% of the questionnaires were

undeliverable (Table 2). Of the questionnaires that were delivered, 71% of the questionnaires were completed and returned.

Estimates of events that occur infrequently are difficult to estimate precisely using common sampling designs (Cochran 1977). Relatively few furtakers harvest river otter, bobcat, badger, fisher, and marten; thus, estimates associated with these species should be viewed cautiously. More precise harvest estimates were probably obtained for these species through tallying registration reports. All furtakers harvesting a river otter, bobcat, fisher, or marten were required to present these animals at a DNR office for registration. Prior to 2003, furtakers were also required to register badger; however, this requirement was eliminated in 2003. In this report, marten harvest was determined only by registration. A separate survey was also conducted to estimate harvest and trapping activity for marten (Frawley 2004).

While the primary objectives of the fur harvesters survey were estimating harvest, trapper and hunter numbers, and trapping and hunting effort, this survey also provided an opportunity to collect information about management issues. Questions were added to the questionnaire to determine whether trappers had used snares while attempting to capture coyote, fox, or beaver during 2003-2004 seasons. Bobcat hunters were asked whether they had hired a guide to assist with hunting bobcats and asked what hunting methods (e.g., dogs, predator calls, incidental take) they commonly used to hunt bobcats.

RESULTS AND DISCUSSION

In 2003, 20,623 licenses were purchased by 20,405 people (Figure 2, Table 2). This was a 9% increase over the preceding three-year average of 18,726. Most license buyers were men (98%), with an average age of 43 years (Figure 3). About 5% of the license buyers (1,094) were younger than 17 years of age.

Mail Harvest Survey. Overall, approximately 64% of license buyers either hunted or trapped furbearers during 2003 (Table 3). About 33% of the license buyers trapped, and 47% hunted furbearers during 2003. Trappers most often pursued raccoons, coyote, and muskrat (Table 4). Hunters most commonly sought coyotes, raccoon, and red fox. Coyotes and raccoons ranked as the most frequently sought furbearers when trappers and hunters were combined.

The estimated number of trappers decreased by about 2% between 2002 and 2003. The estimated number of people trapping during recent years is well below the record highs of nearly 16,000 in the early 1980s (Figure 4). However, the number of trappers during recent years has been comparable to the numbers active during the 1960s. The estimated number of people hunting furbearers increased by 16% between 2002 and 2003. Furthermore, the number of people hunting furbearers has surpassed trapper numbers during recent years (Figure 4).

Harvest levels of most furbearers in 2003 were within historical ranges, except for harvest of muskrats and raccoons (Figures 5-7). The number of muskrats taken by trappers was the lowest recorded since 1957, and the number of raccoons taken by hunters was the lowest

recorded since 1980. Estimated harvest of coyotes by both trappers and hunters was near record-high levels in 2003, while the harvest of red fox by both trappers and hunters was near record-low levels in 2003 (Figures 6 and 7).

Many factors influence harvest trends such as hunter numbers, wildlife population size, hunting regulations, and fur prices; thus, any interpretations of trends should be viewed cautiously. Trends in harvest per furtaker were examined because this measure may eliminate some of the affects of changing furtaker and furbearer numbers over time, although many other factors may still complicate interpretations of these trends.

The mean number of raccoon and opossum taken per furtaker has increased since the early 1980s (Figures 8 and 9). The mean harvest of coyotes per hunter has increased since the mid-1980s, while the mean harvest of red fox by both hunters and trappers has declined during this same period. These trends suggest that raccoon, opossum, and coyote may have been increasing in abundance during the last 20 years, while red fox numbers may have been declining.

Registration Data. The number of bobcat and fisher registered generally increased since 1985, while the number of otter has shown no clear trends (Figure 10, Table 5). Compared to 2002, more marten (75% increase), fisher (27%), and otter (22%) were registered in 2003; however, fewer bobcats (22% decrease) were registered.

Additional Questions Related to Snaring and Bobcat Hunting. An estimated 24% (±2%) of trappers used snares in an attempt to catch coyote or fox (1,563 ± 122 trappers). About 8% (±1%) of trappers attempted to catch beaver using snares in underwater sets (539 ± 73 trappers). About 4% (±1%) of bobcat hunters hired a guide to assist them while hunting bobcats (115 ± 38 hunters). An estimated 59% (±3%) of bobcat hunters used calls while hunting bobcats, while 45% (±3%) of bobcat hunters used dogs (Table 6).

ACKNOWLEDGEMENTS

I thank all the furtakers that provided information. Julie Kennedy, Theresa Riebow and Becky Walker completed data entry. Mike Bailey, Dave Bostick, Dwayne Etter, Cheryl Fliearman, Valerie Frawley, Pat Lederle, and Glen Matthews reviewed a draft version of this report.

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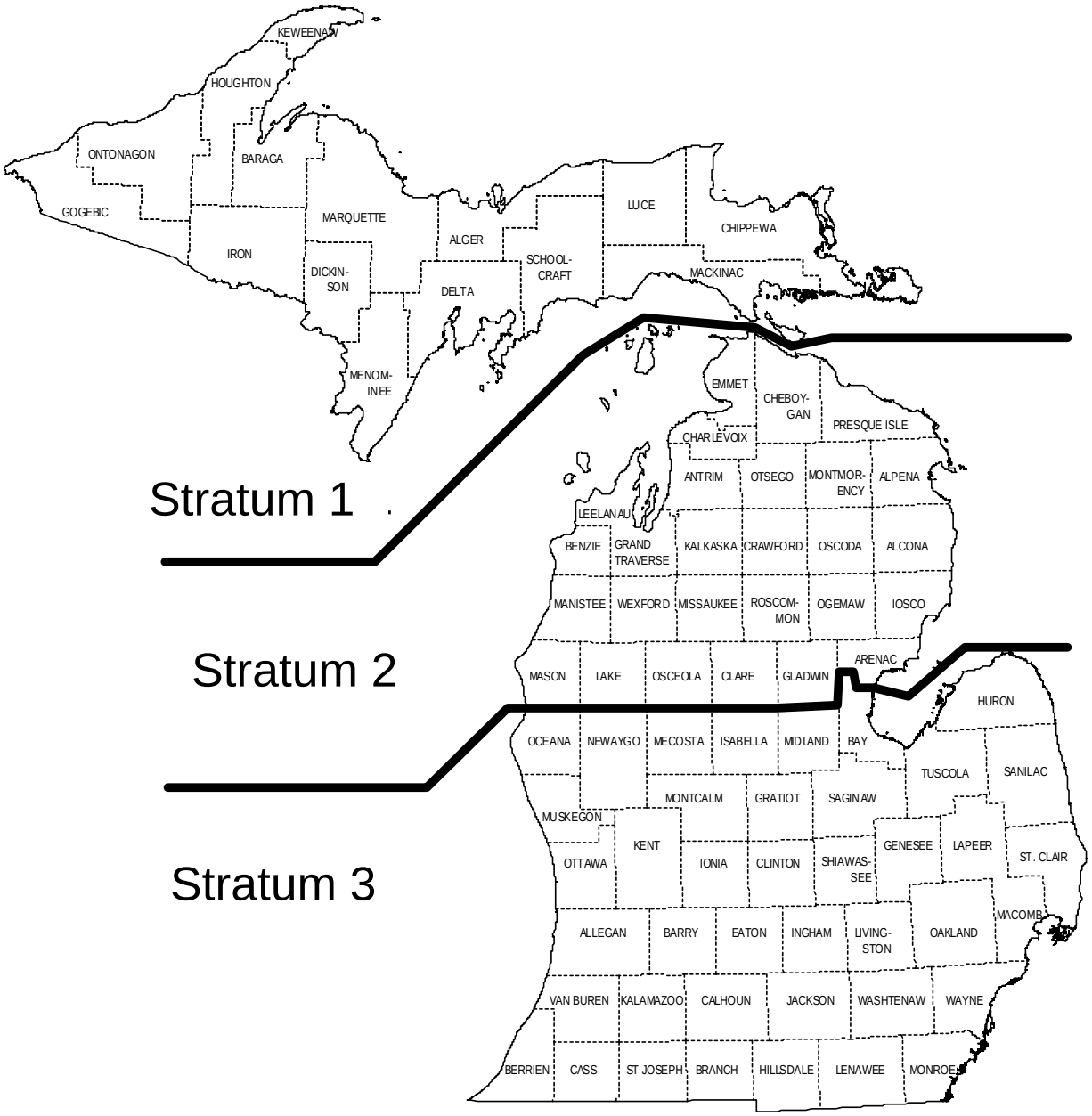


Figure 1. Stratum boundaries used for the analysis of the Michigan furbearer harvest survey. Nonresidents were included as a fourth stratum.

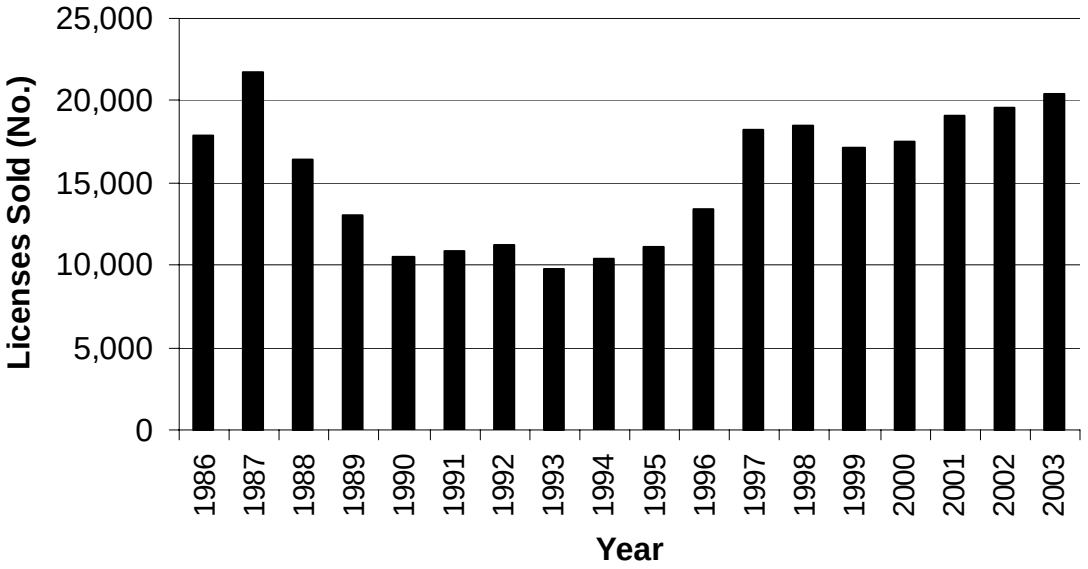


Figure 2. Number of fur harvester licenses sold in Michigan, 1986-2003. Fur harvester licenses included Resident Fur Harvester, Senior Fur Harvester, Junior Fur Harvester, Military Fur Harvester, and Nonresident Fur Harvester licenses. During 1996-2003, totals also included Resident Fur Harvester (trap only) and Junior Fur Harvester (trap only) licenses.

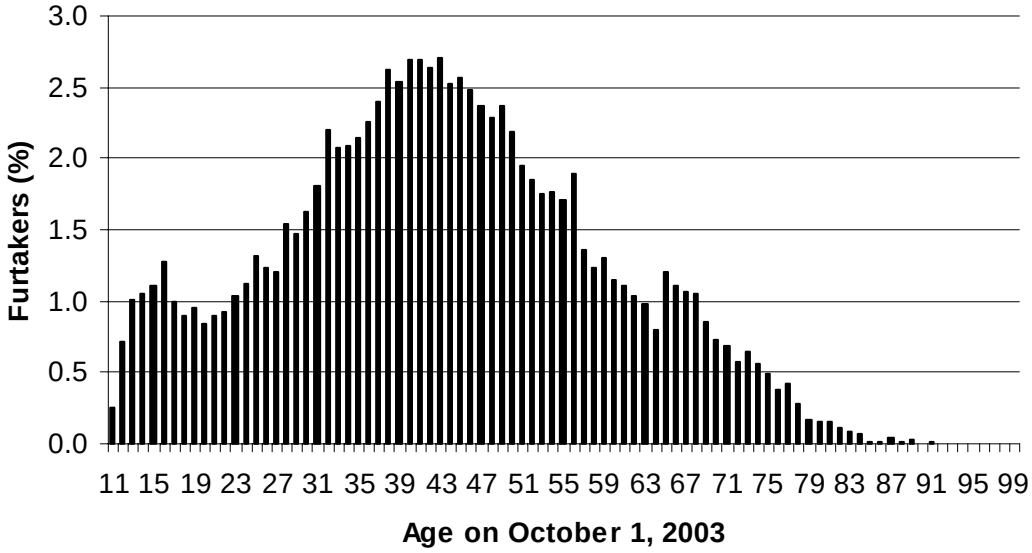


Figure 3. Ages of people that purchased a license to hunt or trap furbearers in Michigan for the 2003 hunting and trapping seasons ($\bar{x}$ = 43 years).

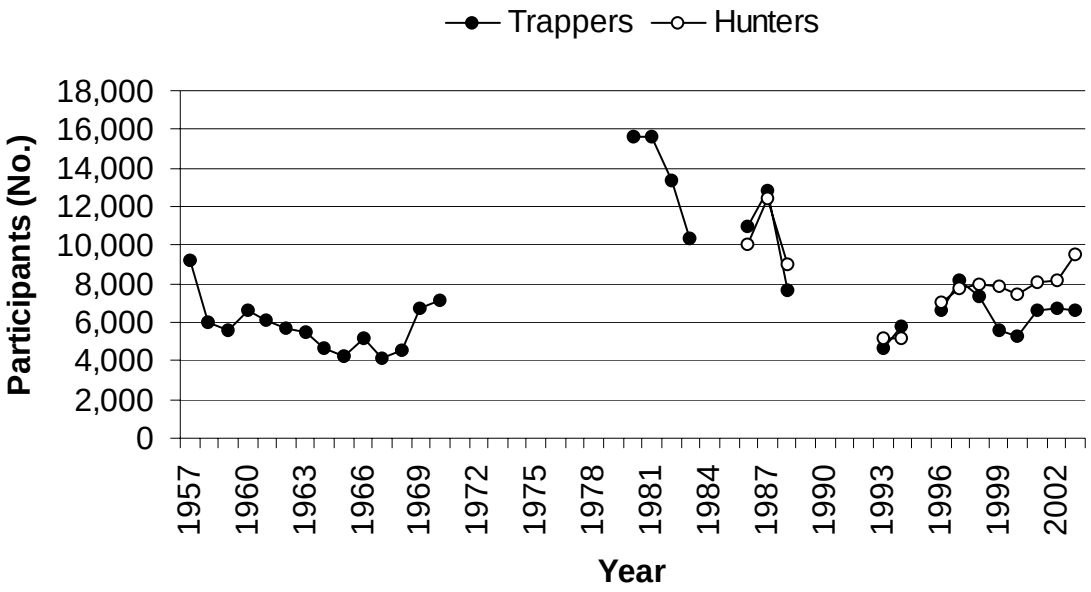


Figure 4. Estimated number of trappers and hunters in Michigan, 1957-2003. Estimates included only license buyers that actually trapped or hunted furbearers (any species). Estimates were not available for years when data were missing.

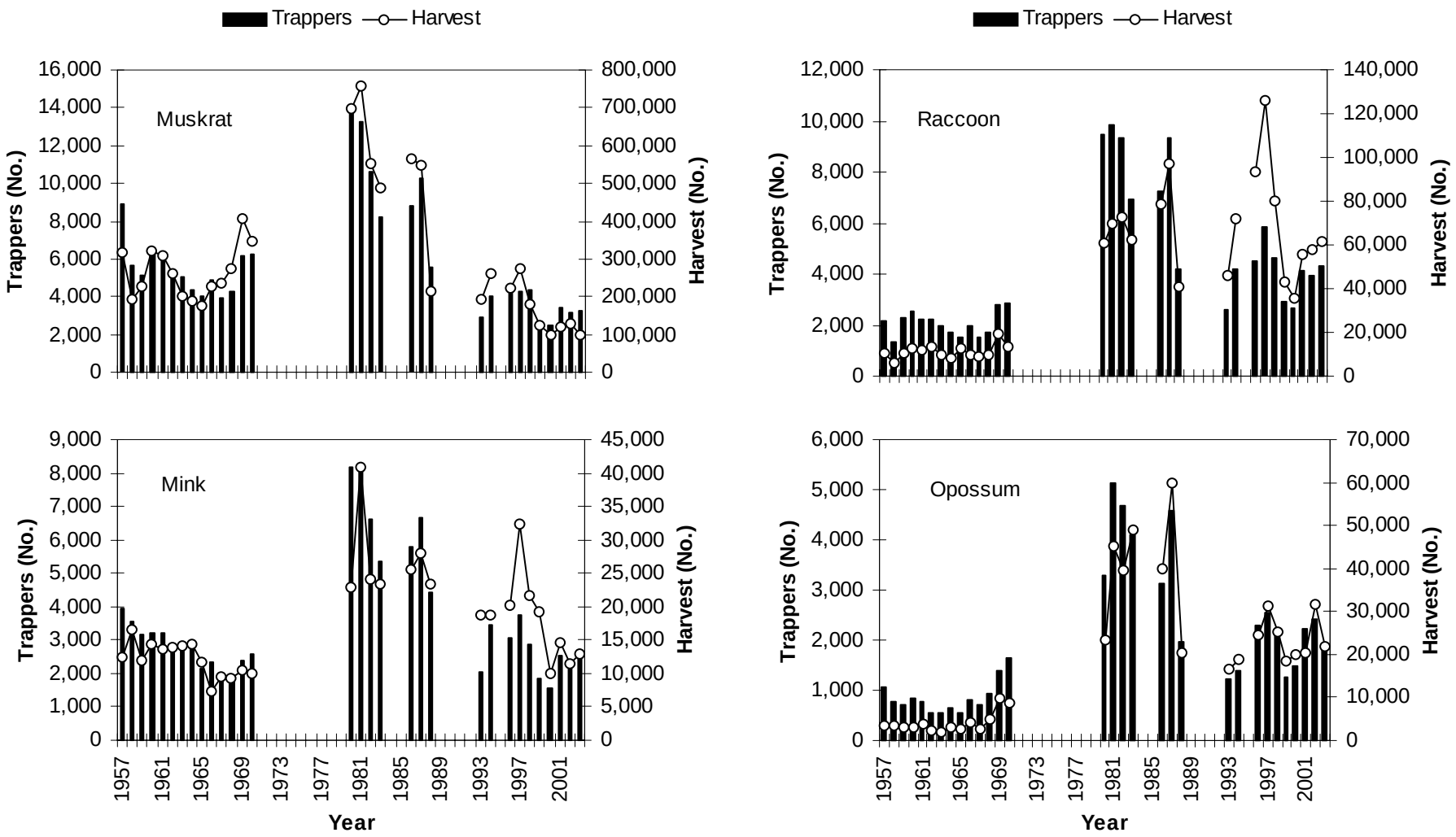
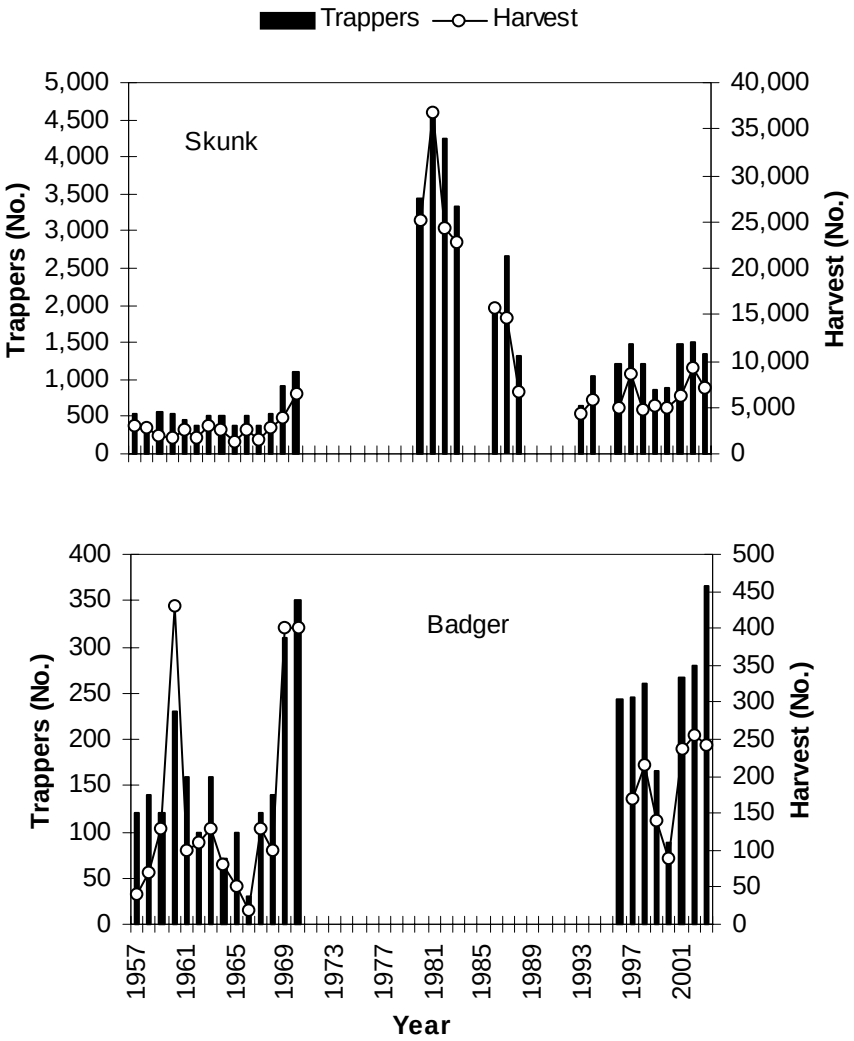
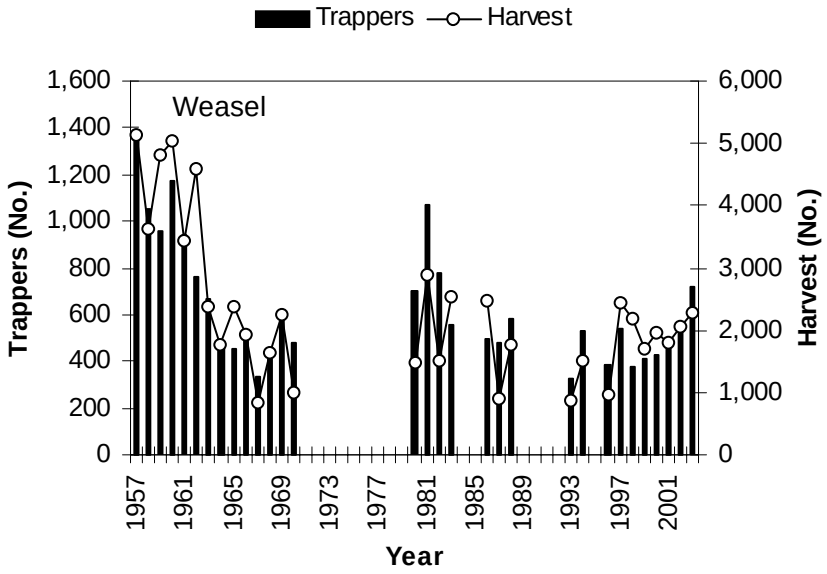


Figure 5. Estimated furbearer harvest by trappers and the number of trappers in Michigan estimated from mail harvest surveys, 1957-2003. Mail survey questionnaires were sent to a random sample of Trapping license buyers during 1957-1969. The sample also included Sportsman's license buyers in 1970-1972. During 1980-1983, the sample included Trapping and Senior Hunting license buyers. During 1986-2003, the sample was selected from people buying either Resident Fur Harvester, Senior Fur Harvester, Junior Fur Harvester, Military Fur Harvester, or Nonresident Fur Harvester licenses. The sample also included Senior Hunting license buyers during 1986-1988. Starting in 1996, samples also included people buying Resident Fur Harvester (trap only) and Junior Fur Harvester (trap only) licenses. A survey was not completed for the years that data were missing.





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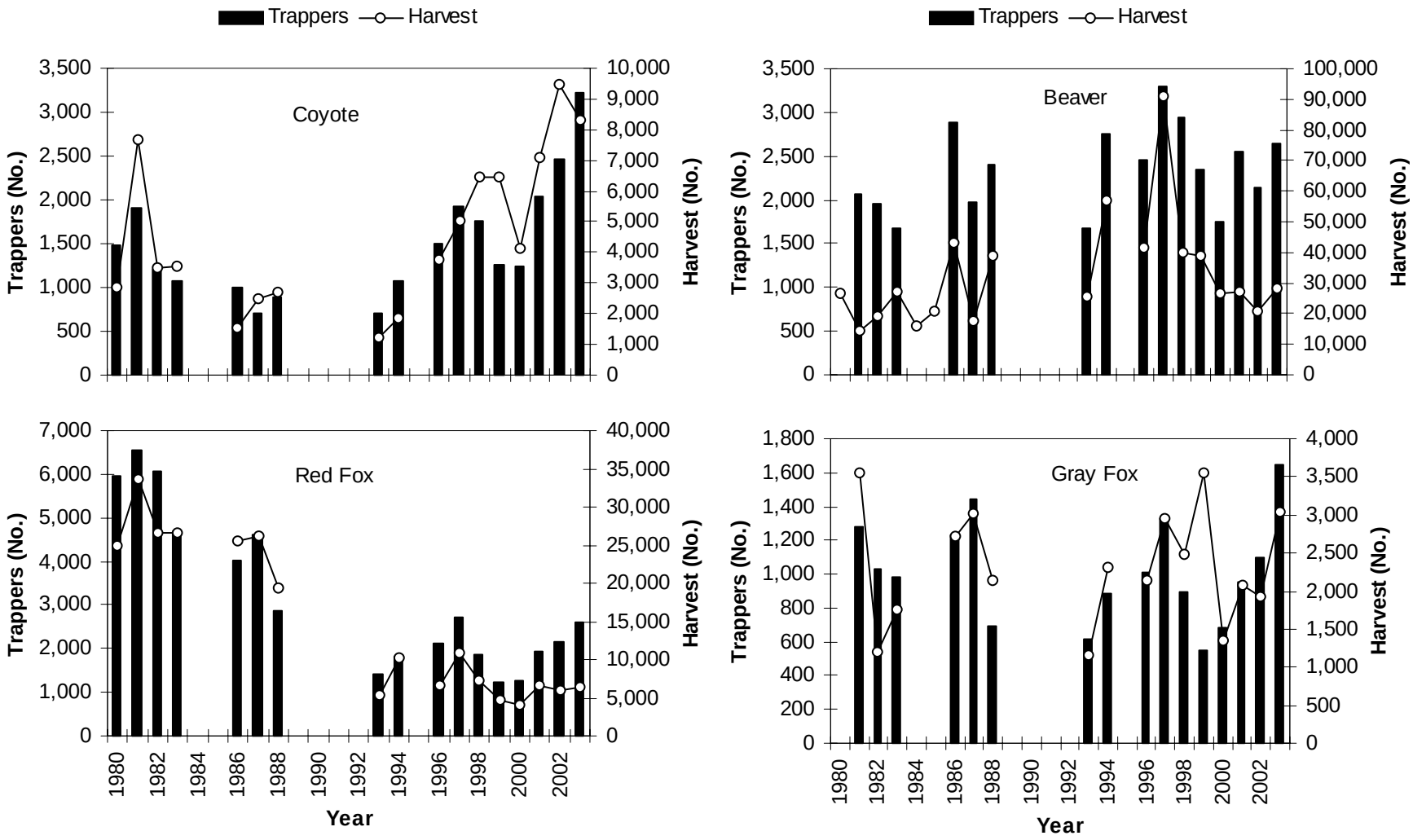
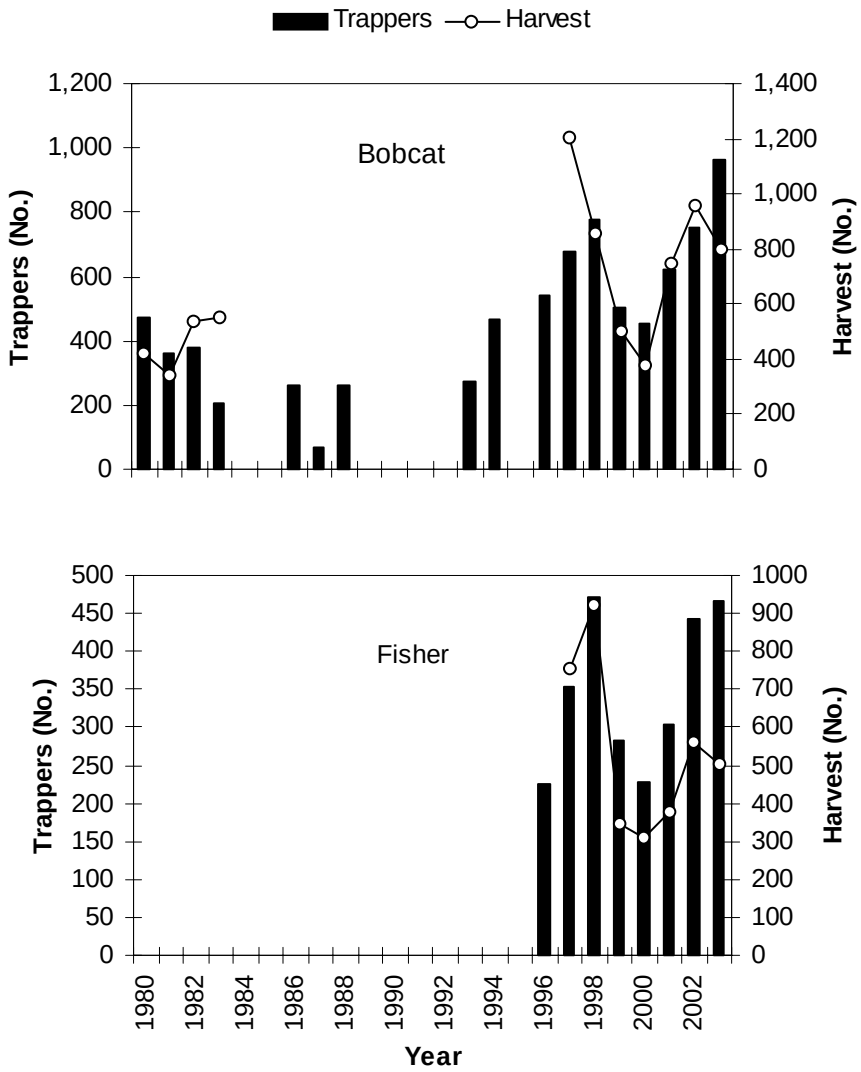
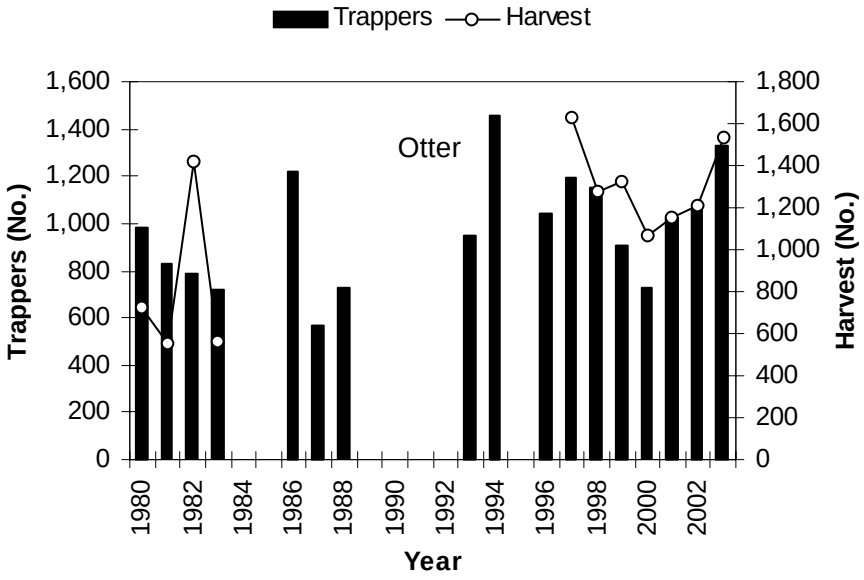


Figure 6. Estimated furbearer harvest by trappers and the number of trappers in Michigan estimated from mail harvest surveys, 1980-2003. The mail survey was sent to a random sample of Trapping and Senior Hunting license buyers during 1980-1983. During 1986-2003, the sample was selected from people buying either Resident Fur Harvester, Senior Fur Harvester, Junior Fur Harvester, Military Fur Harvester, or Nonresident Fur Harvester licenses. The sample also included Senior Hunting license buyers during 1986-1988. Starting in 1996, samples also included people buying Resident Fur Harvester (trap only) and Junior Fur Harvester (trap only) licenses. A survey was not completed for the years that data were missing.





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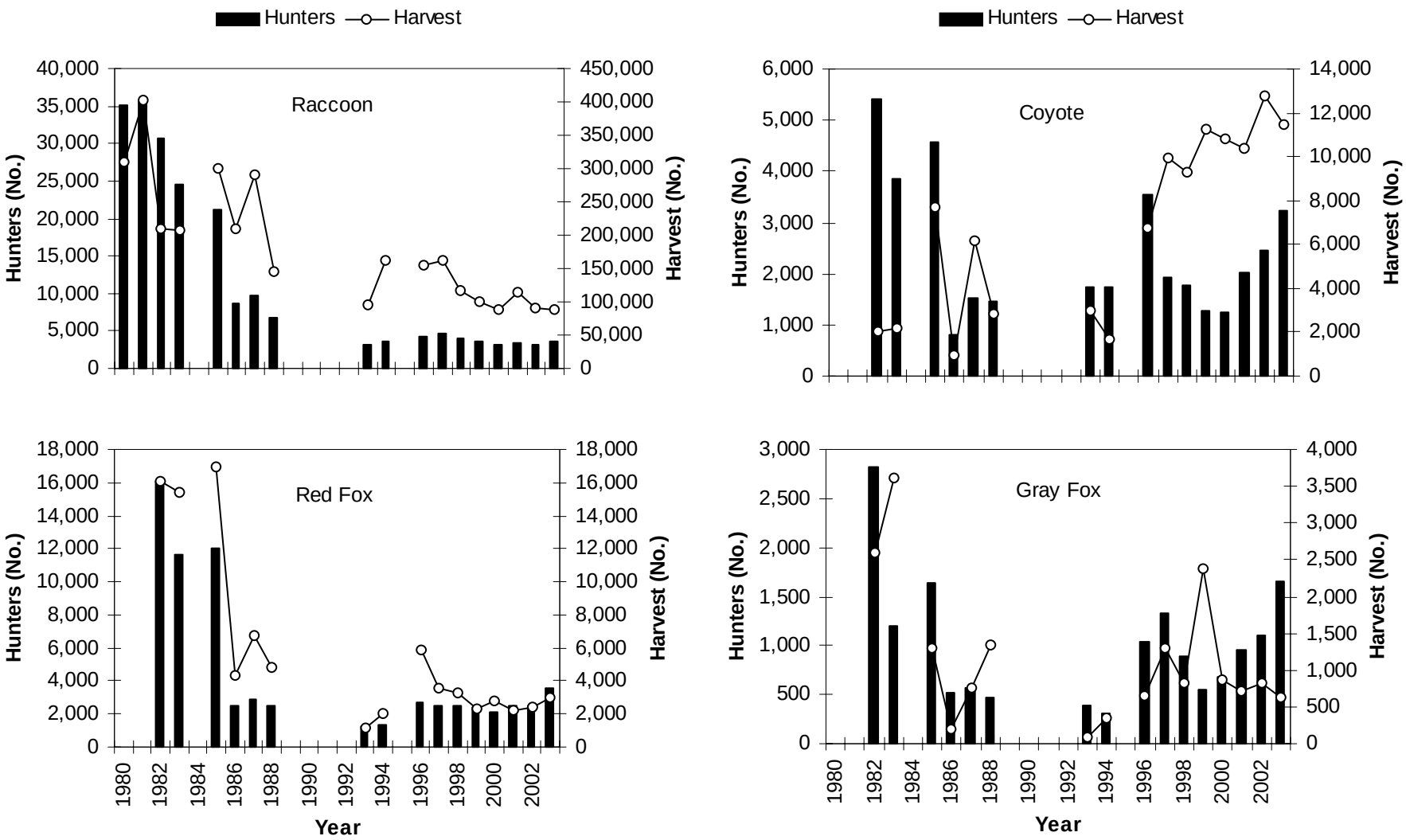
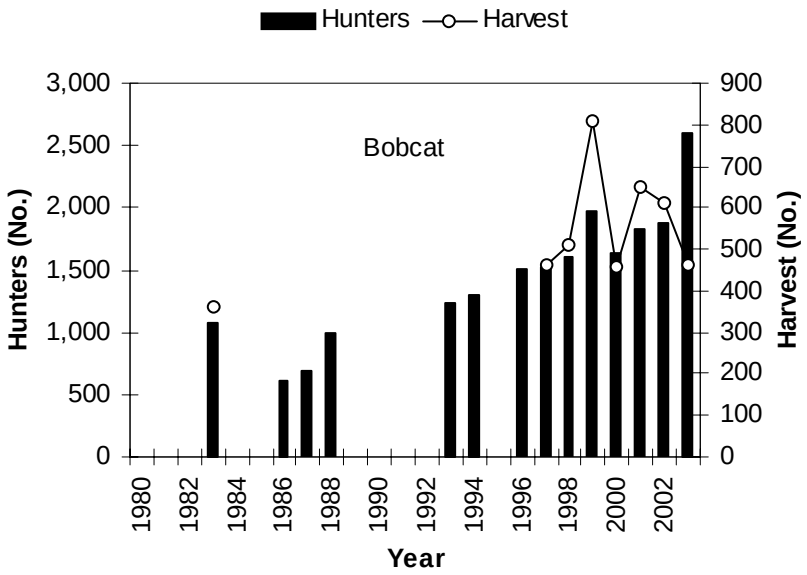


Figure 7. Estimated furbearer harvest by hunters and the number of hunters in Michigan estimated from mail harvest surveys, 1980-2003. The mail survey was sent to a random sample of people buying either small game licenses, Senior Hunting licenses, or Sportsman's licenses during 1980-1985. During 1986-2003, the sample was selected from people buying either Resident Fur Harvester, Senior Fur Harvester, Junior Fur Harvester, Military Fur Harvester, or Nonresident Fur Harvester licenses. The sample also included Senior Hunting license buyers during 1986-1988. Starting in 1996, samples also included people buying Resident Fur Harvester (trap only) and Junior Fur Harvester (trap only) licenses. A survey was not completed for the years that data were missing.



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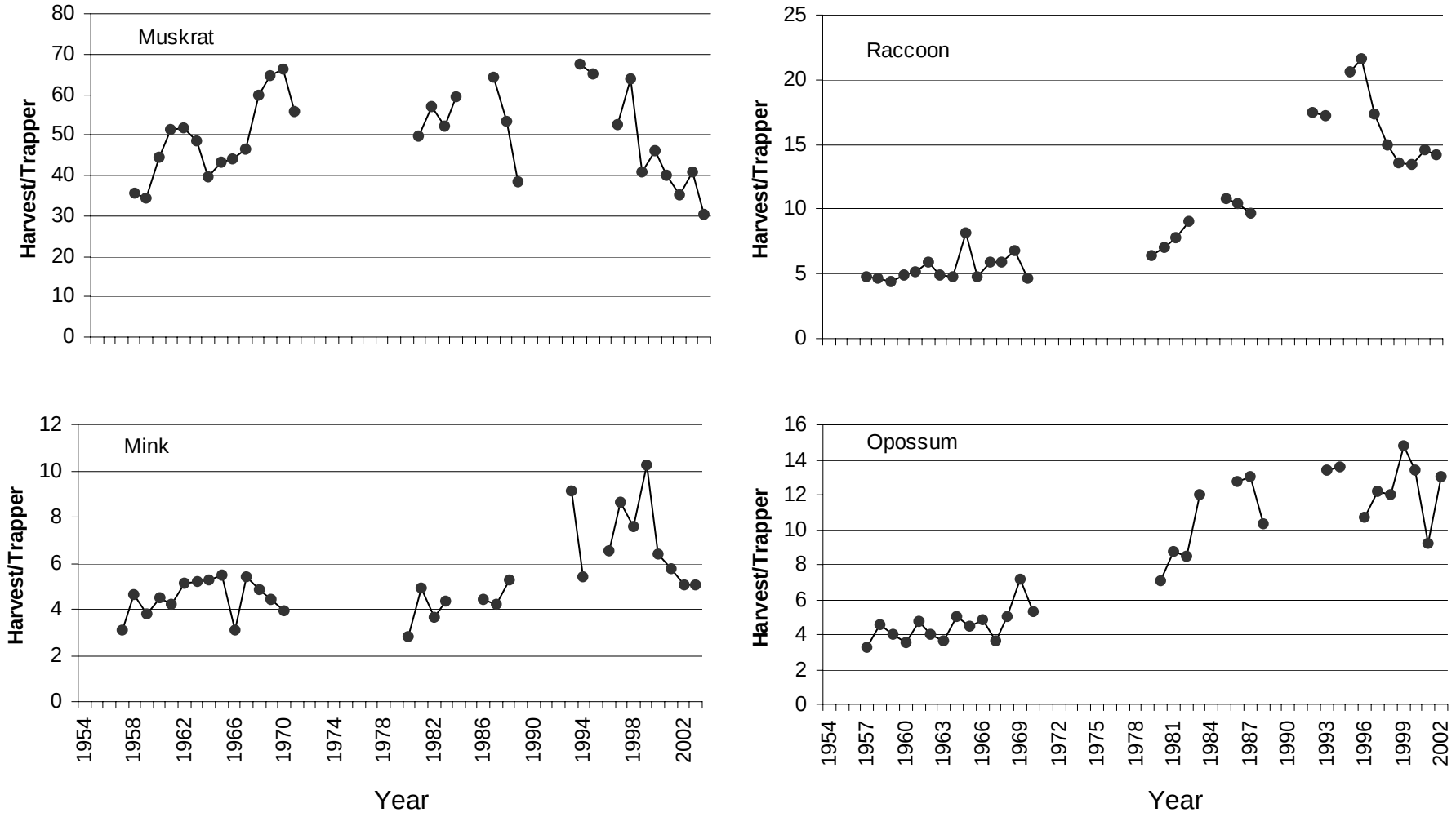
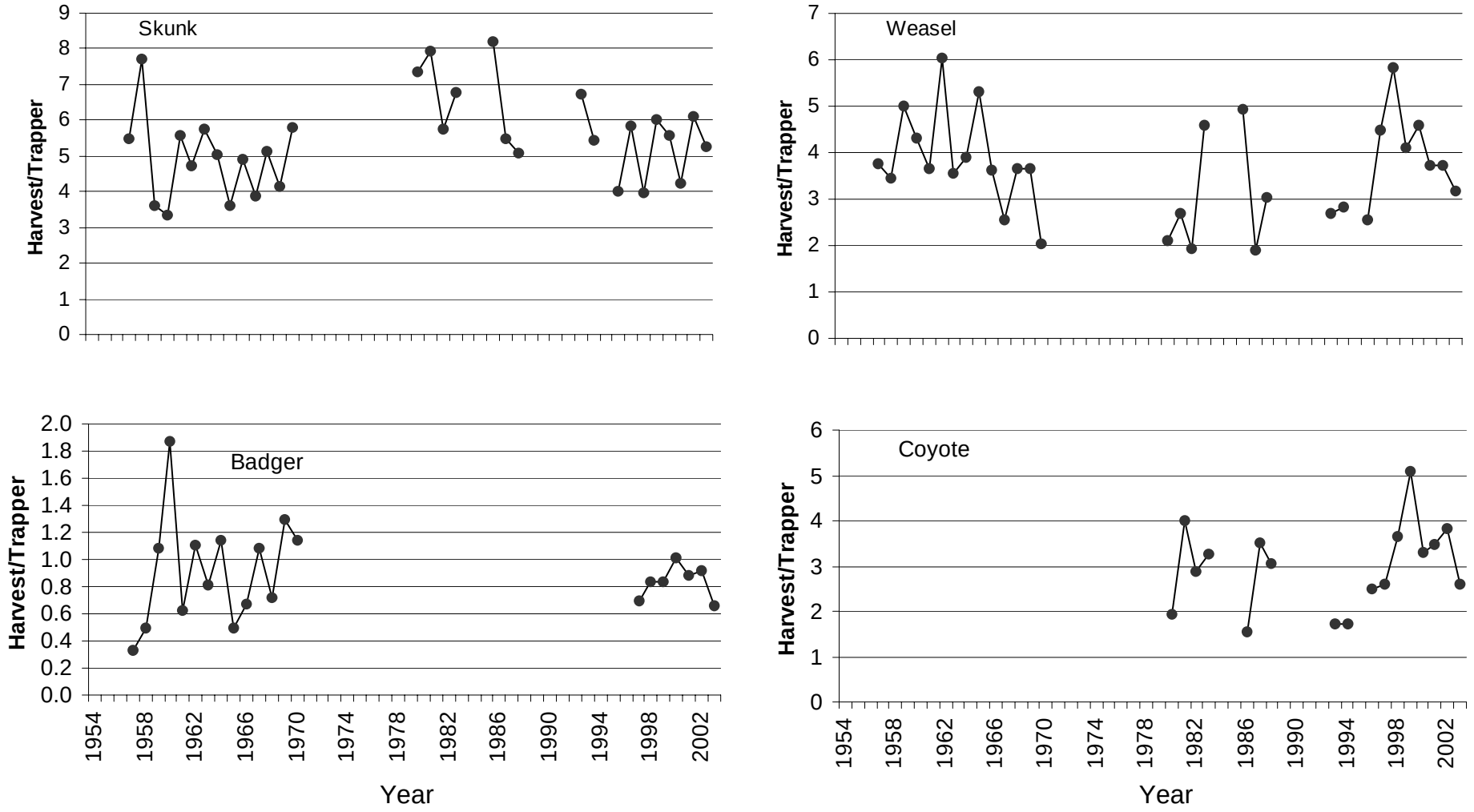


Figure 8. Estimated mean number of furbearers harvested annually by trappers in Michigan estimated from mail harvest surveys, 1954-2003. A survey was not completed for the years that data were missing.



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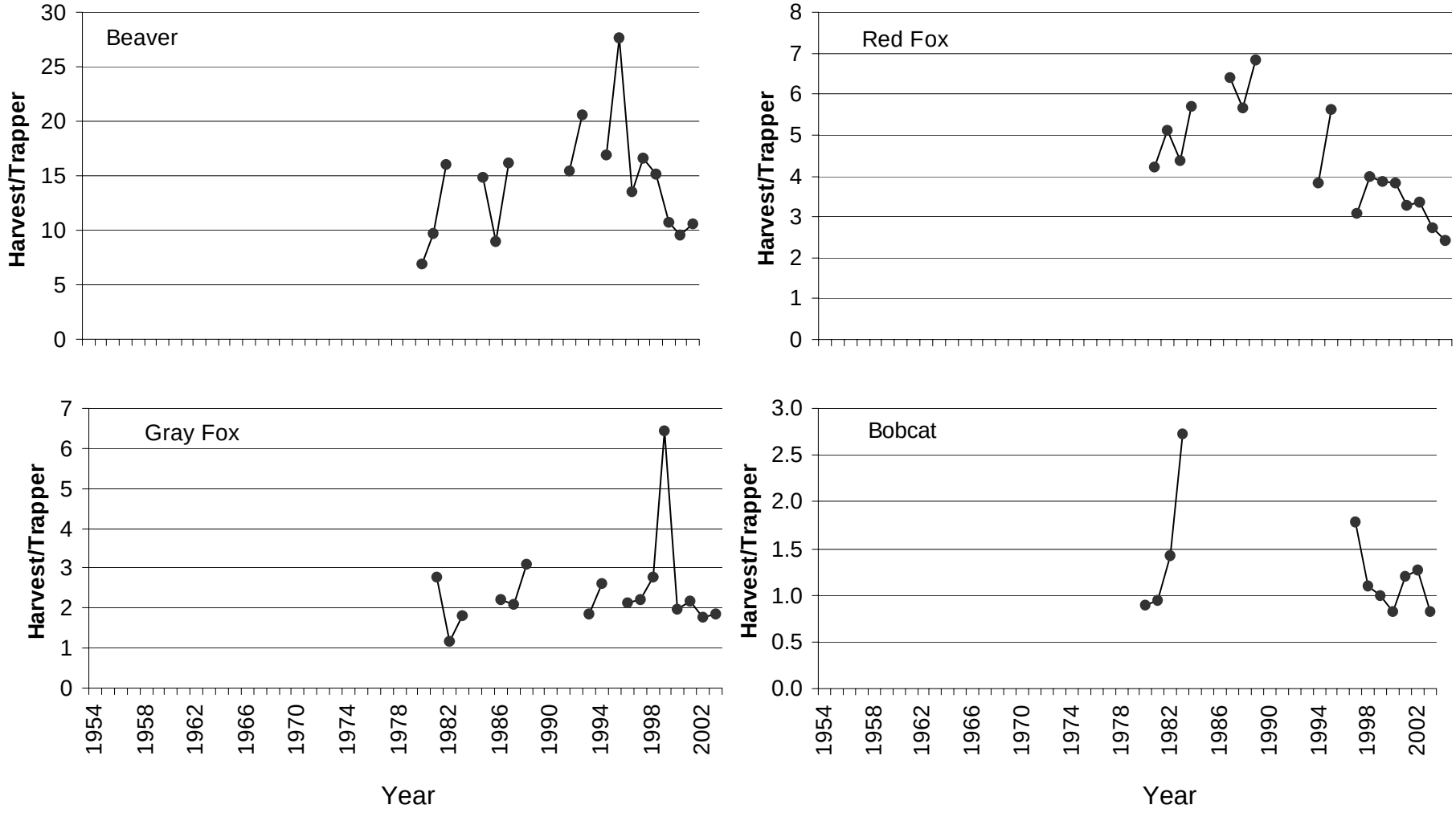

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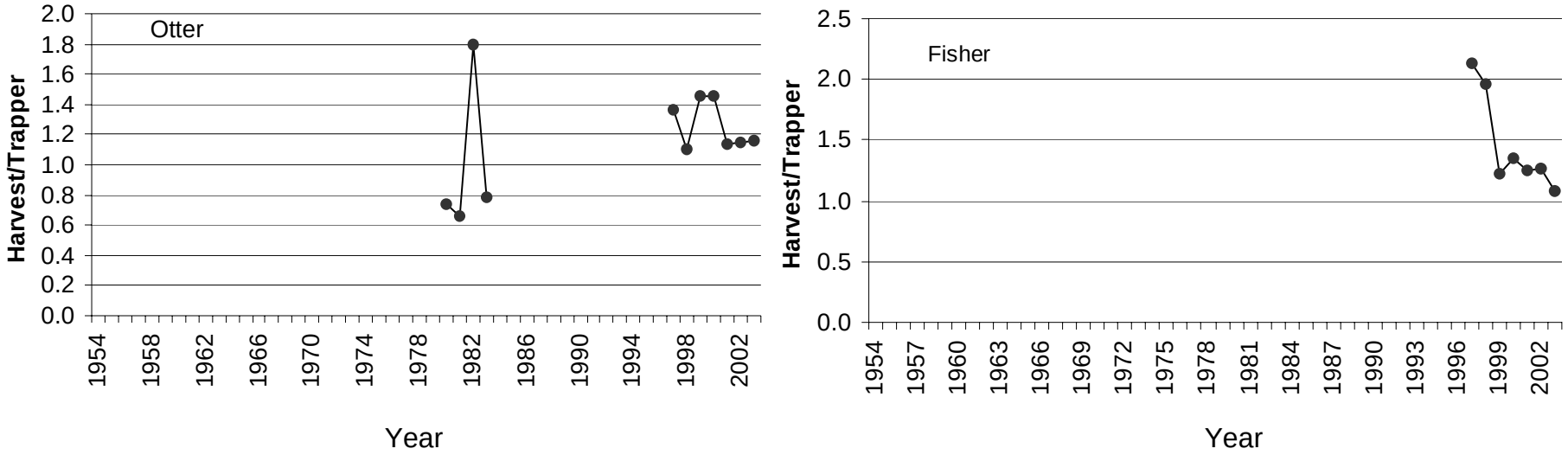

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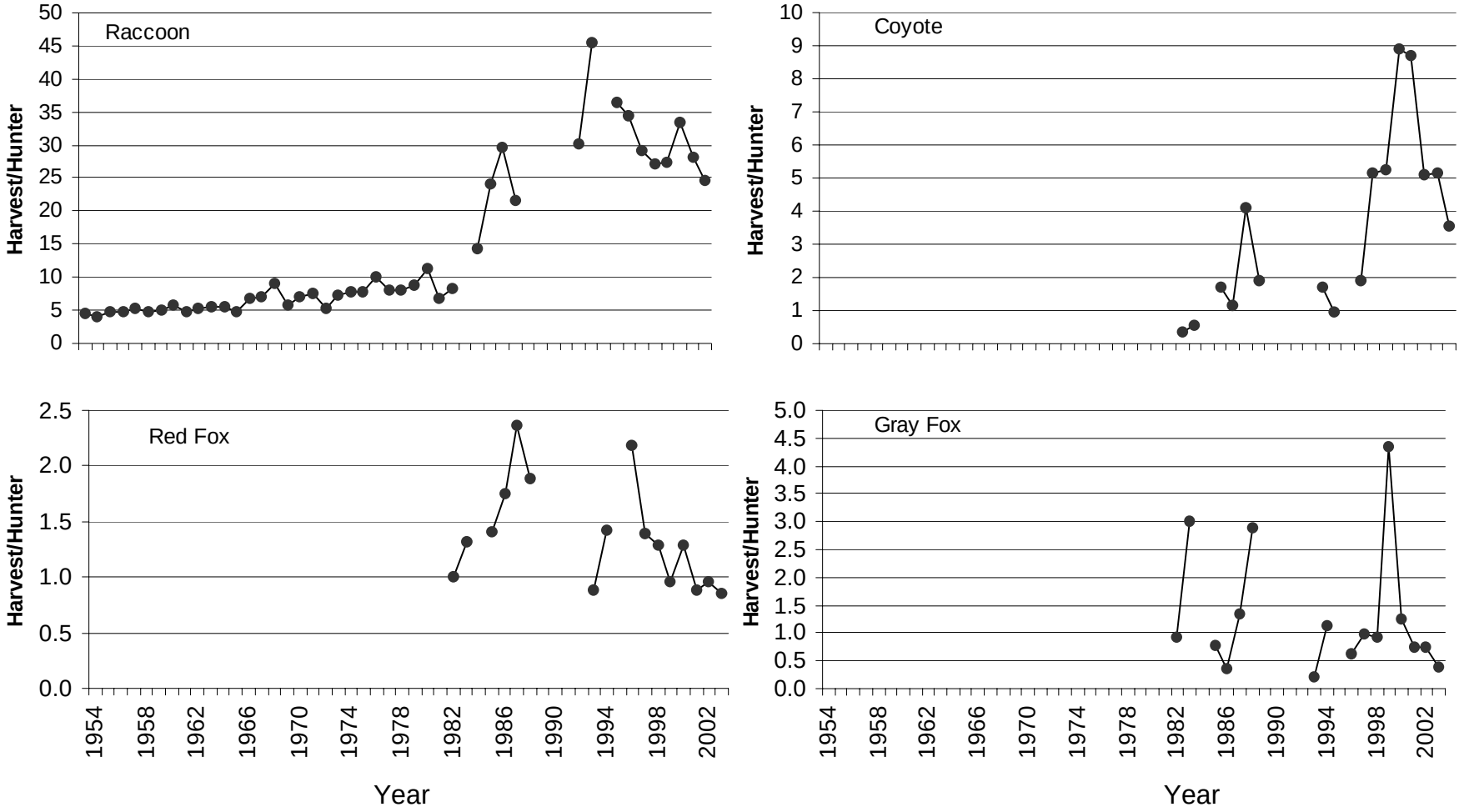
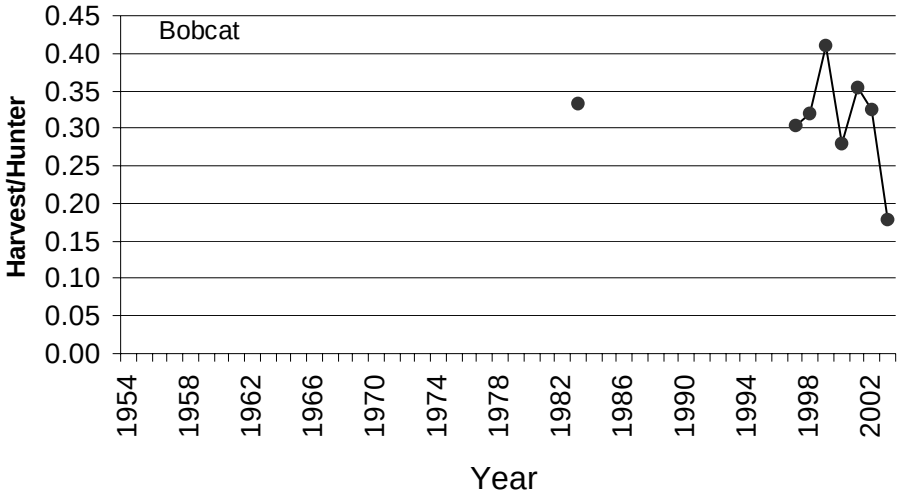


Figure 9. Estimated mean number of furbearers harvested annually by hunters in Michigan estimated from mail harvest surveys, 1954-2003. A survey was not completed for the years that data were missing.



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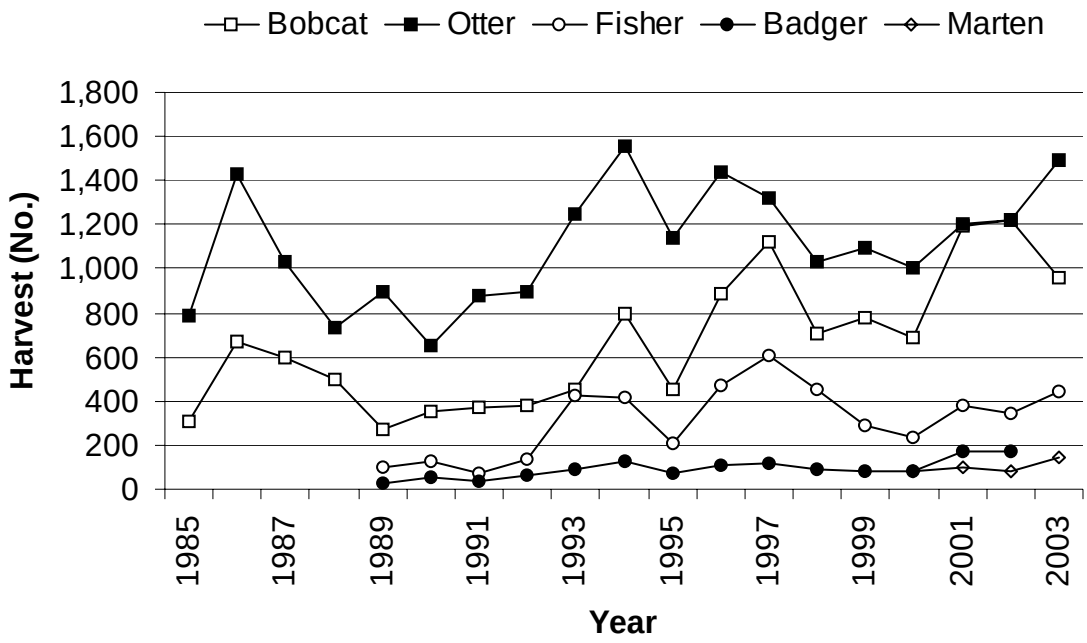

Figure 10. Number of bobcat, otter, fisher, badger, and marten registered by furtakers in Michigan, 1985-2003. Badger and fisher seasons were established in 1989, and marten season started in 2000. Totals for 2003 were preliminary. Beginning in 2003, badger was no longer registered.

Table 1. Trapping and hunting seasons when furbearing animals could be harvested in Michigan during 2003 seasons.[a]

Season, species, and area	Season dates
Trapping seasons[b]	
Muskrat and Mink	
UP	October 25 – January 31
NLP	November 1 – January 31
SLP	November 10 – January 31
Raccoon	
UP and NLP	October 15 – January 31
SLP	November 1 – January 31
Fox and Coyote	
Statewide	October 15 – March 1
Bobcat	
UP	October 25 – March 1
Badger	
UP and NLP	October 15 – November 14
SLP	November 1 – March 1
Fisher and Marten	
UP	December 1 – 15
Beaver and Otter[c]	
UP	October 25 – April 18
NLP	November 1 – April 18
SLP	November 10 – March 31
Hunting seasons	
Bobcat	
UP	December 1 – March 1
NLP (northern portion)	January 1 – March 1
NLP (southern portion)	January 15 – February 16
Fox	
Statewide	October 15 – March 1
Raccoon	
Statewide	October 1 – January 31
Coyote	
Statewide[c]	July 15 – April 15

[a]No closed season for opossum, weasel, and skunk.
[b]Nonresidents may trap from November 15 through the regular season closing date, except for beaver. The opening date for nonresident beaver trapping varied by area.
[c]Resident seasons only.
[c]Season closed during firearm deer season in the UP.

Table 2. Number of fur harvester licenses sold and people receiving and returning harvest questionnaire, 2000-2003.

	Year			
Item	2000	2001	2002	2003
Licenses sold	17,519	19,082	19,577	20,623
Individuals buying licenses[a]	17,339	18,874	19,386	20,405
Questionnaires mailed	3,100	3,100	3,100	8,000
Non-deliverable questionnaires	52	69	50	145
Questionnaires not returned	694	657	768	2,280
Questionnaires returned	2,354	2,374	2,282	5,575
Questionnaires returned (%)[b]	77	78	75	71

[a]A person was counted only once, regardless of how many licenses they purchased. License types included Fur Harvester, Junior Fur Harvester, Senior Fur Harvester, Non-resident Fur Harvester, Military Fur Harvester, Resident Fur (trap only), and Junior Fur (trap only).
[b]Response rate adjusted to exclude non-deliverable questionnaires.

Table 3. Estimated number of fur harvester license buyers who trapped or hunted furbearers in Michigan, 2000-2003.

	2000		2001		2002		2003	
Participants	No.	95% CL	No.	95% CL	No.	95% CL	No.	95% CL
Trappers	5,318	300	6,594	337	6,767	347	6,632	213
%	31	2	35	2	35%	2%	33%	1%
Hunters	7,403	322	8,034	347	8,212	368	9,534	228
%	43	2	43	2	42%	2%	47%	1%
Combined[a]	10,739	316	12,086	341	12,168	362	13,068	220
%	62	2	64	2	63%	2%	64%	1%

[a]A person was counted only once, although they may have both trapped and hunted furbearers.

Table 4. Estimated number of participants, harvest, and days afield (effort) during Michigan furbearer seasons, 2002 and 2003.

Species and season	Participants (No.)				Harvest (No.)				Days afield (No.)			
	Year		95%		Year		95%		Year		95%	
	2002	2003	CL[a]	Change	2002	2003	CL[a]	Change	2002	2003	CL[a]	Change
Trapping												
Mink	2,271	2,576	151	13%	11,416	12,931	1,898	13%	54,134	72,629	6,161	34%
Raccoon	3,965	4,339	187	9%	57,936	61,722	6,173	7%	96,971	121,101	7,957	25%
Opossum	2,454	1,858	131	-24%	32,020	21,946	3,033	-31%	69,293	57,861	6,443	-16%
Skunk	1,525	1,339	113	-12%	9,281	7,070	1,126	-24%	40,079	45,081	6,065	12%
Weasel	555	717	83	29%	2,069	2,284	558	10%	18,437	23,349	4,063	27%
Red fox	2,191	2,593	152	18%	5,999	6,320	919	5%	54,961	74,843	6,441	36%
Gray fox	1,108	1,650	124	49%	1,951	3,035	1,297	56%	31,249	52,993	5,888	70%
Coyote	2,488	3,222	166	30%	9,537	8,325	1,105	-13%	67,910	97,245	7,695	43%
Bobcat[b]	760	965	90	27%	969	795	133	-18%	22,126	29,142	4,188	32%
Beaver	2,167	2,637	151	22%	20,665	28,047	4,928	36%	60,884	70,116	7,531	15%
Muskrat	3,203	3,209	166	0%	131,036	97,167	11,293	-26%	74,860	86,094	6,740	15%
Otter[b]	1,064	1,325	110	25%	1,219	1,536	177	26%	31,804	40,473	5,561	27%
Fisher[b]	445	467	67	5%	565	504	109	-11%	4,174	4,485	751	7%
Badger	281	367	61	30%	256	242	50	-6%	4,554	7,505	1,754	65%
Hunting												
Raccoon	3,237	3,540	173	9%	91,216	86,965	10,080	-5%	65,271	80,216	7,070	23%
Red fox	2,497	3,526	172	41%	2,390	2,992	565	25%	31,959	45,996	3,995	44%
Gray fox	1,079	1,623	123	50%	836	627	180	-25%	18,593	22,875	3,170	23%
Coyote	5,984	7,298	219	22%	12,847	11,454	1,297	-11%	91,939	97,938	6,158	7%
Bobcat[b]	1,888	2,605	151	38%	616	461	84	-25%	19,160	27,160	2,929	42%
rapping and hunting combined												
Raccoon	6,599	6,729	216	2%	149,152	148,687	12,348	0%	162,242	201,316	11,097	24%
Red fox	4,251	5,309	200	25%	8,389	9,312	1,112	11%	86,920	120,839	7,976	39%
Gray fox	2,002	2,812	156	40%	2,786	3,662	1,314	31%	49,841	75,868	7,123	52%
Coyote	7,548	8,886	226	18%	22,385	19,778	1,799	-12%	159,848	195,183	10,420	22%
Bobcat[b]	2,585	3,256	161	26%	1,585	1,256	157	-21%	41,286	56,302	5,408	36%

[a]95% CL for the 2003 estimate.

[b]Estimates from mail harvest survey. See Table 5 for the number of animals registered.

Table 5. Number of bobcat, otter, fisher, badger and marten registered by furtakers in Michigan, 1985-2003.

	Species						
	Bobcat (by method of capture)						
Year	Hunting	Trapping	Unknown	Otter	Fisher[a]	Badger[a,b]	Marten[c]
1985	193	100	14	791			
1986	268	390	11	1,431			
1987	315	277	5	1,030			
1988	327	170	0	731			
1989	178	91	0	896	99	28	
1990	266	85	0	654	125	52	
1991	292	79	0	878	68	35	
1992	276	104	0	896	140	63	
1993	285	163	0	1,251	425	90	
1994	373	422	0	1,552	417	124	
1995	311	138	1	1,137	208	75	
1996	463	420	0	1,438	471	109	
1997	347	771	0	1,323	609	117	
1998	331	375	0	1,028	455	91	
1999	434	343	0	1,097	291	82	
2000	379	307	0	1,006	236	85	85
2001	464	728	0	1,203	381	174	97
2002	482	741	0	1,219	348	173	85
2003[d]	339	621	0	1,489	443		149

[a]Badger and fisher seasons were established in 1989.
[b]Furtakers no longer were required to register badgers beginning in 2003
[c]Marten season was established in 2000.
[d]Preliminary totals.

Table 6. Hunting methods used by bobcat hunters in Michigan during 2003-2004.[a]

	Frequency of use							
Hunting	Occasionally		Usually		Always		Total	
method	%	95% CL	%	95% CL	%	95% CL	%	95% CL
Dogs	6%	1%	5%	1%	34%	3%	45%	3%
Calls	11%	2%	9%	2%	39%	1%	59%	3%
Incidental	9%	2%	3%	1%	3%	1%	15%	2%
Other	2%	1%	1%	1%	1%	1%	4%	1%

[a]An estimated 2,605 ± 151 people hunted bobcats.